Intangible Assets Identification and Valuation – a Theoretical Framework Approach to the Portuguese Airlines Companies

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Abstract: Intangibles have emerged in the last decade as an important issue among companies' accounting theories. Companies have implemented strategies based on the robustness of their own intellectual capital. Competitive advantage is based on the capacity to anticipate, innovate and make shared use of opportunities. In the air transportation sector, strong changes have also occurred – traditional value chains based on linear activities alignment, were replaced by a new perspective: the innovation cycle (specific intangibles recognition associated with new business models) and its impact on the operational cycle. This paper presents a theoretical framework approach about intangible assets identification and valuation in the air transportation sector as a whole. The first step of this empirical evidence is based on the Portuguese Airlines companies.

Keywords: intangible, knowledge, intellectual capital, valuation, air transportation

1. Introduction

Intangible assets appear, nowadays, as an important issue in the accounting rules frontier – a tension between those responsible for accounting standards establishment and those who use the information, are indeed evident. Intangibles have a value but due to their volatile nature and difficulties in their measurement, they are normally excluded from the financial statements. However, according their linkage and contribution for certain businesses, their importance for stakeholders is irrefutable. Traditional financial reports, based on traditional accounting rules that exclude the potential return, seem to be irrelevant for decision-making. Thus, intangibles identification and measurement approaches can contribute for a better decision-making. Innovation cycle or the innovation value chain claims for a deep analysis on the intangibles identification, measurement and reporting. Radical changes have been occurred in the last two decades of the twentieth century. New business models have also emerged in which knowledge creation, capture, re(use) and diffusion constitutes the way ahead to value creation. Companies need to identify the drivers that contribute for a higher value level and intensity. Investment in intangibles is probably the first step to innovation and consequently for wealth creation. Intellectual capital management and reporting can, on a feasible basis, support the gap of perception between accounting and market value.

2. Aims and objectives

This paper focuses on the importance of intangible assets in the entire value creation process. Although the standard accounting rules specifications, intangibles act as a key driver in businesses value creation and are strongly interlinked with several strategies effectively followed. Innovation is probably the most visible face on this topic, which results from prior investments in intangibles such as human and structural capital. Despite the importance of intangible assets, we underline a theoretical framework approach for the Portuguese Airlines companies. Specific intangibles should be evidenced that contribute for value creation in this particular branch of activity. Thus, our objective is to underline the importance of intangibles in those companies and define a theoretical approach to identification, measurement and reporting of their intellectual capital assets.

3. Intangibles: an interlinked approach

The term "Intangible" is as concept to which no consensus exists on their definition. Dependent from accounting rules and measures, authors like Cohen (2005), Andriessen (2004), Lev (2001) and Brockington (1996) argue about their impact on businesses and on company's value creation. Thus, historically, intangibles have been treated as an aggregated amount (goodwill), without impact on national wealth neither included in financial statements of firms. Goodwill, in nature, represents a residual, which incorporates all

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intangibles that cannot be measured separately. In this paper we focus on those ones that can be identifiable and be measured under impairment approaches, having or not an indefinite lifetime (Epstein and Mirza, 2005: 234).

According Blair and Wallman (2003:451)

> *"intangibles are non-physical factors that contribute to, or are used in, the production of goods or the provision of services or that are expected to generate future productive benefits to the individuals or firms that control their use".*

Broadly, a typical intangible asset cannot be bough or sold in an organised market, the verification of its existence may be impossible, it may not have a finite life, its value can fluctuate (which means that it should be submitted to the impairment analysis) and sometimes it is strongly interlinked with a specific activity, product/ service or business. Hence, intangible assets are commonly development expenditures, patents and trademarks, brand names, databases, human know-how, strategic alliances and processes. Despite that, individuals and companies have an expected future return and benefits based on the intangibles management. Nevertheless, accounting systems defined by FASB has a very conservative nature. Expenditures in research and development, advertising and other similar ones, should be immediately expensed even tough they traduce expected future returns. However, as stated by Lev and Sougiannis (2003:145), firms' RandD capital was found to be associated with subsequent stock returns.

It is, nowadays, irrefutable that intangibles identification, management, measurement (income, cost or market approaches) and reporting is a key burner on the value creation process. Lev (2001:5) defines intangibles as

> *"a claim to future benefits that does not have a physical or financial (a stock or a bond) embodiment. A patent, a brand, and a unique organisational structure (for example an Internet based supply chain) that generate cost savings are intangible assets".*

Intangible assets measures and risks such as research and development capitalisation, organisational innovation processes and intellectual capital approaches act as key drivers in the value creation process. Knowledge arises as the main way to the wisdom achievement and wealth creation. Although intangibles have non-physical nature that contributes to the production of goods and services, companies expect for their future benefits and returns. Individuals and companies responsible to manage them look for the market; adjust their business processes through customisation approaches. Broadly, strategies followed by companies such as alliances, mergers and acquisitions, internal and external diversification or disinvestments, even driven by integrated and innovative market approaches, are based on intangibles in particular research and developments programs. Thus, knowledge based assets are responsible for the major business changes occurred in those decades. From an accounting point of view, intangibles identification is the first step towards a better financial reporting. Although those assets are not included in the balance sheet, they should be reported to the stakeholders. Accounting systems stagnation and its conservative nature has the primarily responsible for the perception lack between accounting value (based on equity) and market value (based on information perception and integration). We underline that the intangibles identification can contribute to a better company's analysis even those assets are not included in the financial statements. Creating value for companies through intangible assets also requires the implementation of strategies based on innovation processes, strongly supported by investments in intangible (Lev, 2001).

4. New value throughout intellectual capital approaches

As already previously mentioned, value has been assuming a major role, reaching a multidimensional plan. Intellectual capital approaches (Edvinsson et al. 1997), efficient knowledge management systems and intangible assets management constitute strong burners on the value creation and retention process. Whereas the customer acquisition aims at measuring in absolute or relative terms the capacity of the company in attracting or acquiring new customers for business, the client satisfaction aims at measuring how well the company is functioning. Retention capacity indicates the level of customers that are set in each business segment. However, to know the customer satisfaction level is not by itself a condition to assure high retention or profit level. Thus, high levels of customer satisfaction are needed to assure a recurrent behaviour in terms of purchase. To ensure a deep customer satisfaction level, it has strongly important the product or service intrinsic characteristics (functionality, uniqueness, quality, price and sense of opportunity). Companies should acquire the possibility of acting pro-actively regarding their customer needs and answering them on time. It results from the conjugation of several domains throughout companies acquire a competitive edge resulting on considerable financial returns.

Internal business dimension is an important variable in achieving value. It matches customer needs in providing them with a set of attributes, which are also interlinked with shareholders expectations by affording an excellent financial return. Focusing on the processes with a significant impact on customer satisfaction and on the results achievement, it has an impact in the creation of a new value chain, supported by new business internal processes (Kaplan and Norton 1996). Traditional value chain was primarily directed on focusing the processes and activities, which supply products and/or actual services to actual customers. This wave of value creation begins by ordering a product and/or service already in existence on the part of the actual customer and finishes with their delivery. According to the traditional value chain, the company has created value based on production activities, delivery and after-sales services. The new view upon the value chain, which takes on a long-term financial outlook, requires a structure that can create new products and/or services, which match the emerging future needs or potential customers. The process of innovation (Kaplan and Norton 1996:27-28) has become, for a large number of organisations, a more important mean of a future financial performance than can be in itself, their operational cycle. This means that, in the emerging markets, already catalogued as new business models, the success states on the organisation's capacity to successfully manage the products and services development and in reaching new categories of costumers with an highly retention power.

An approach based on the innovation value represents a strategic logic in which the orientation does not lie on the fact of wanting to be constantly ahead of competitors. In fact, it was a characteristic over the last decades in the conventional logic, in which the competitors become irrelevant on the prosecution and on the value creation. Knowledge management was not induced by processes or businesses by themselves. Thus, it seems to us appropriate to identify these two logics that seem to direct the creation value on the strategic outlook. The underlying differences of those strategic logics can be reached throughout some key dimensions. These differences intend to emphasise the main questions that managers have to face: which opportunities are diagnosed or sought after and how is the business risk dealt with? Actually, the value-based strategies are not established on the industry conditions as a starting point, but in the fundamentals in which the strategic options are founded. Strategic focus is on confronting their strong and weak points with those of the competitors and, from they're, identifying the best way to establish a competitive advantage, opposing the idea that the competition only works as a simple benchmarking.

Conventional logic has oriented strategy for the expansion of the customers' data, always responding to each of their specific needs. Innovation based strategies have been directed towards an opposite logic in the sense that they are directed towards what the different customers have in common, even if it means, in some cases, loosing some of them. On the other hand, conventional logic treats opportunities according with its actual recourses and capacities whereas innovation logic would never admit any kind of constraint caused by that level or resources and/or capacities. The supply of products and/or services does not obey to this logic, the traditional limits rule imposed by the industry - it focuses the overall solution and, thus, on the generic value chain, even if that leads the organisation to the brink of a new business. In this manner and in the ambit of business, the search for synergy ceases to limit itself to the main activities and the support activities of the value chain to assume the most diverse shapes: knowledge sharing, strategy coordination, physical resources sharing, vertical integration, negotiation sharing and the creation of combined businesses (Campbell and Goold 1998:133). That synergy may be of great help to the organisation but it is essential in a first phase to know how to distinguish true opportunities from illusions. Sometimes the results obtained from that synergy are more productive in cases where a minor number of initiatives are pursued.

It has been also mentioned that organisations have been seen for many years as value chains or even as systems in which the value is created by transforming certain inputs in more refined outputs. Strategic changes associated with the value chain management are related with the production of goods with a proper quality at the lowest possible cost. This cost reduction or the value increase was initially associated to the effect of economies of scale, to the efficiency in the resource use capacity, to the learning effect, to the information circuits about products as well as to the quality measures. The key success critical factors identified in this process of creation value certainly include a whole set of relations between the principal and the support activities. Nowadays, this approach has also extended to other means of value creation such as the networks development. Besides the value chain approach identified and formalised, two more configurations of value were emerged: value networks and value shops. In the former, organisations create value by sharing activities, whereas, in the latter, competencies of helping them to resolve a problem are sold.

The key factors of competitiveness which have directed the evaluation of industry attractiveness in the last decades continue to constitute an essential basis for that evaluation, although due to the differences of performance deriving from the followed strategies, they have been complemented with the analysis of the competition position. Market development, strongly marked by technology development, even by the evolution of quality concepts and by the business ethics in itself, has been demanding the development of new techniques, which enable us to measure the business-related performance but also the business own risk measure. The importance lost within traditional analysis of the industry attractiveness has revealed over the last decades. We are now oriented to the emergence of new performance measures and to the identification of new key factors that create value, tangible or intangible assets, framed in the domains of knowledge and/or in the information and communication technologies - the knowledge management system revolution. The impact of its development is not due to the fact that the companies are becoming more profitable by increasing the rate of hourly production, but on allowing access to a greater diversity of information sources, but in its velocity processes. Nowadays, there is a global market for the technology and for the individual skills. The goal is not only on developing competences that represent by themselves a competitive edge, but also on developing them economically and faster than the competition. Clarifying the value system and making it work is the major contribution that each individual can give to the value creation. This logic is the one, which has prevailed on the last few decades and which seems to persist in the digital economy, although in a more integrated, aggressive and volatile way.

5. Intangible assets measurement approaches

Literature focuses on three valuation techniques towards intangible assets measurement: income, market and cost approaches (Reilly and Schweihs 1998; Cohen 2005). Income approach is a straightforward application using discounted cash flows methodology, which are associated to the expected future returns. Assuming the basic principles of the financial theory, three main steps should be followed in order to achieve a feasible measurement: identify the asset from which we expect an economic future return, estimate the expected cash flows over time and finally assign an appropriate measure of risk to our prediction (using Capital Asset Pricing Model, Arbitrage Pricing Theory or any other financial approach). These approaches present, however, the weakness that it may be very difficult to come up with reasonable and unbiased expected future cash flows. Under a market approach, we assume that an asset can be related to the value of comparable assets priced in the marketplace (comparable method). The more heterogeneous assets are the more difficult is to use the market approach. For intangibles, comparable approach cannot be followed once there is no active market for those intangibles. Some evidences exist that market approach can be followed for patents, licences, strategic alliances and other intangibles with a definite lifetime and subject to impairment analysis. The cost approach for intangibles is probably the most linear which considers the book cost (recorded in the traditional financial statements) or the replacement cost (with a wide range of interpretation. Broadly, equals reproduction cost less curable functional and technological obsolescence). Reilly and Schweihs (1998:144) argue that

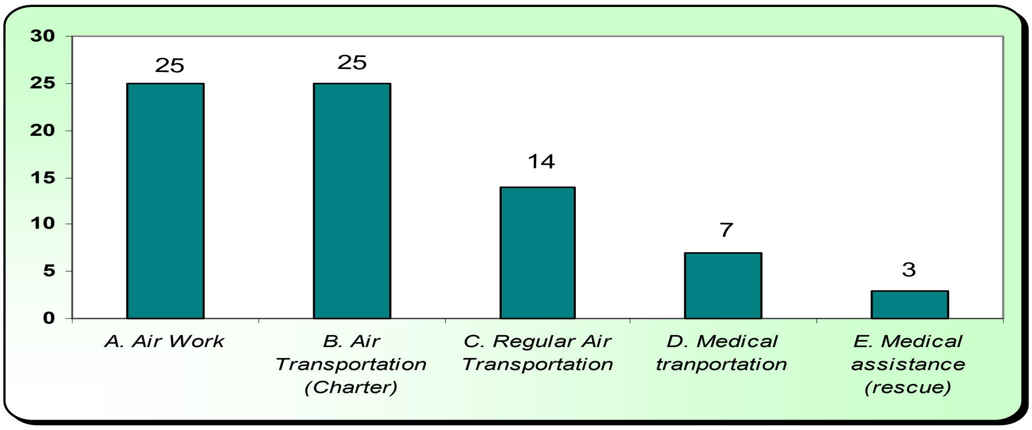
> *"the cost approach is one fundamental way of estimating the value of intangible assets and intellectual properties. There are several cost approach valuation methods, the most common being the reproduction cost method and the replacement cost method".*

Thus, for intangibles without an active market or under a comparison limitation, this approach would be followed on a systematic basis.

6. The Portuguese airlines sector

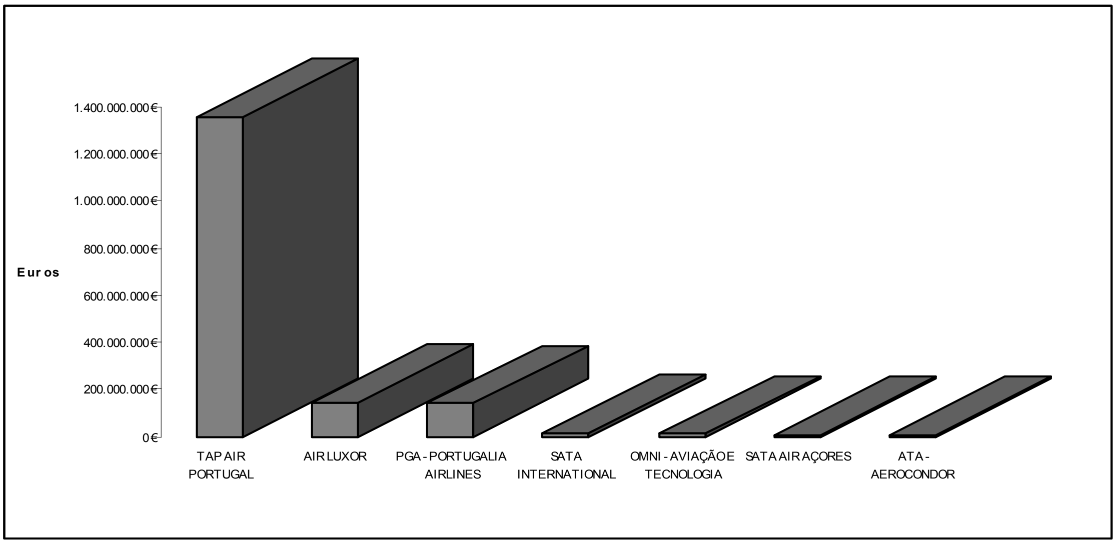
6.1 Generic intangible assets identification

The Portuguese Airlines Sector aggregates 38 companies, developing several activities, namely: regular air transportation, charter activities and emergence activities. All of them are certified by the National Institute of Civil Aviation (NICA) for those activities (Figure 1). However, in 2004, only seven companies were certified to regular air transportation activities (regular flights), as mentioned in table 1. In the last two years, other seven companies have been certified as regular air transportation operators.



Source: National Institute of Civil Aviation (2006)

Figure 1: The Portuguese Air Transportation Sector

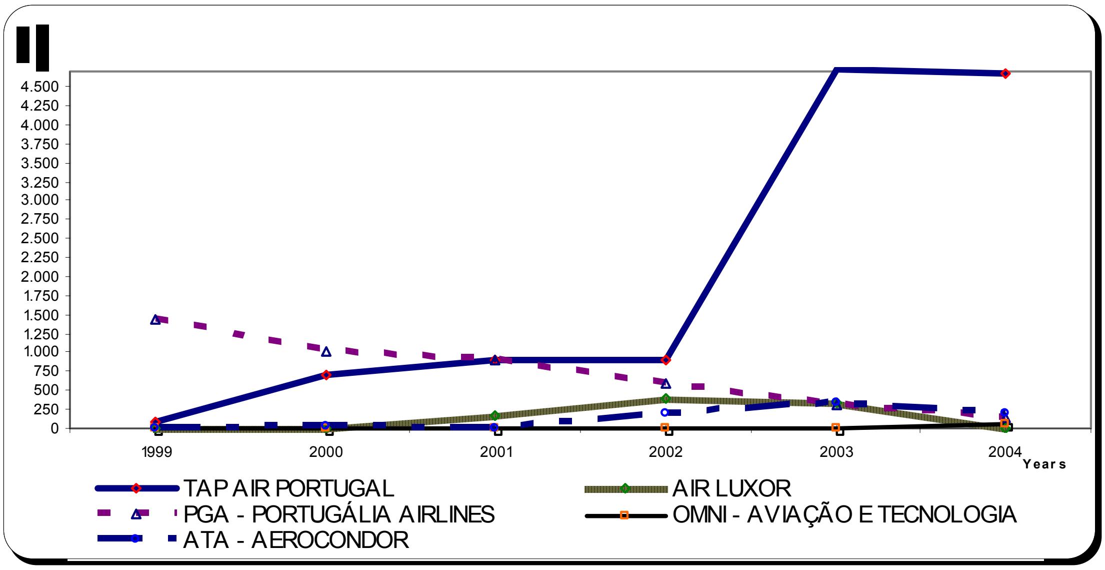


Source: Companies annual financial reports (2004)

Figure 2: Sales and services (euros) for companies with regular flights

TAP Air Portugal (Public company) represents more than 80% of the sector activity, followed by Air Luxor, a private company. PGA – Portugália Airlines, a regional airline company, was classified in 2005 as the best regional European company. In 2006, other seven companies were certified to regular transportation. However, relative position for the companies mentioned in Table 1 was not been modified. In this paper we present a theoretical framework approach: our assertion is that there are several intangibles not included in the financial statements nor adequately included in the management reports. In some cases, we argue that some intangibles are incorrectly expensed. In this preliminary step, our hypothesis include the identification of several intangibles (having or not a definite lifetime), which should be feasibly analysed, in order to improve the management information available to the stakeholders as a whole. Those intangibles can be identified as follows: preventive maintenance programs, specific learning programs, cod share agreements, strategic alliances (e.g. Star Alliance), brands, frequent passengers programs, flying certificates granted by NICA, research and development investments, software and databases and other rights. These intangibles should be measured and integrated in the financial statements or specified in the management reports.

Figure 3: Intangible assets in the Portuguese airlines companies



Source: Annual financial reports (1999 - 2004)

Intangible assets included in the financial statements relate to goodwill, research and development (RandD) investments, property rights and installation expenses. There is no evidence about other intangibles identification included in the annual financial reports. Thus, the supremacy of TAP Air Portugal and PGA – Portugália Airlines has no significance if we compare the intangible assets impact on the net balance sheet value. Intangibles like maintenance programs, specific learning programs, cod share agreements, strategic alliances, brands, frequent passengers programs and flying certificates are not included nor reported. Most of them are immediately expensed and included in the profit and loss account. Intangibles identification in the balance sheet is evidenced in Table 1, as follows:

Table 1 – Intangibles reported in the annual financial statements

Company Airline	Goodwill	Research and Develop.	Industrial Property and Rights	Installation Expenses	Other Rights (contracts)
TAP AIR PORTUGAL	●	●	●	●	
AIR LUXOR		●	●	●	
PGA – PORTUGALIA AIRLINES		●	●	●	
SATA INTERNATIONAL					
OMNI – AVIAÇÃO E TECNOLO.				●	●
SATA AIR AÇORES					
ATA – AEROCONDOR		●	●	●	

Source: Annual financial reports (2004)

As stated in the Table 1, intangibles recognition or identification is not a strategic issue. We have focused our attention to intangible assets as value sources but we are also aware that the essence of value, although strongly conditioned by that assets typology, wears itself out. Nevertheless, integrated outlooks of the possible factors, which can influence the value creation or destruction from the stockholder's point of view, are required. For instance, strategic commercial based alliances are usually formed between companies that try to enter into new markets or expand their existing ones. Stakeholders seem to perceive those alliances as advantages and as a value creation source.

Strategies in this type of company are based on the capacity to anticipate, innovate and make shared use of opportunities and knowledge. Other more wide-ranging factors were also identified, which cause fluctuations in the value of companies: strategic alliances as "Star Alliance", diversification by international acquisition, and use of "outsourcing", mergers and disinvestment decisions. Companies should anticipate the value migration process focusing on their innovation cycles and customers needs. Create value arises in the new economy as the key burner to maintain a sustainable competitive advantage.

In the previous analysis to financial reports, traditional intangible assets have been recognised in the financial statements namely "goodwill" (as an aggregate value), research and developments investments, industrial property and rights, company installation expenses and other intangible as contracts. This is the traditional approach based on the Portuguese accounting rules and, since 2004, based on international accounting standards. However, our concern relates to other intangibles that are not accounted and/or not reported in the financial statements. Our assertion is that those intangibles strongly drive the company value. Some of them, emerging from air transportation literature review are: brand names, cod share agreements, international alliances, frequent passenger programs, preventive maintenance programs, and human capital typologies, license typology granted by INCA, local agreements, and specific contracts, among others not yet identified.

6.2 A theoretical framework approach for specific intangible assets identification

In order to achieve our investigation goal, a theoretical approach is proposed, for the Portuguese Airlines sector, as shown in Figure 4:

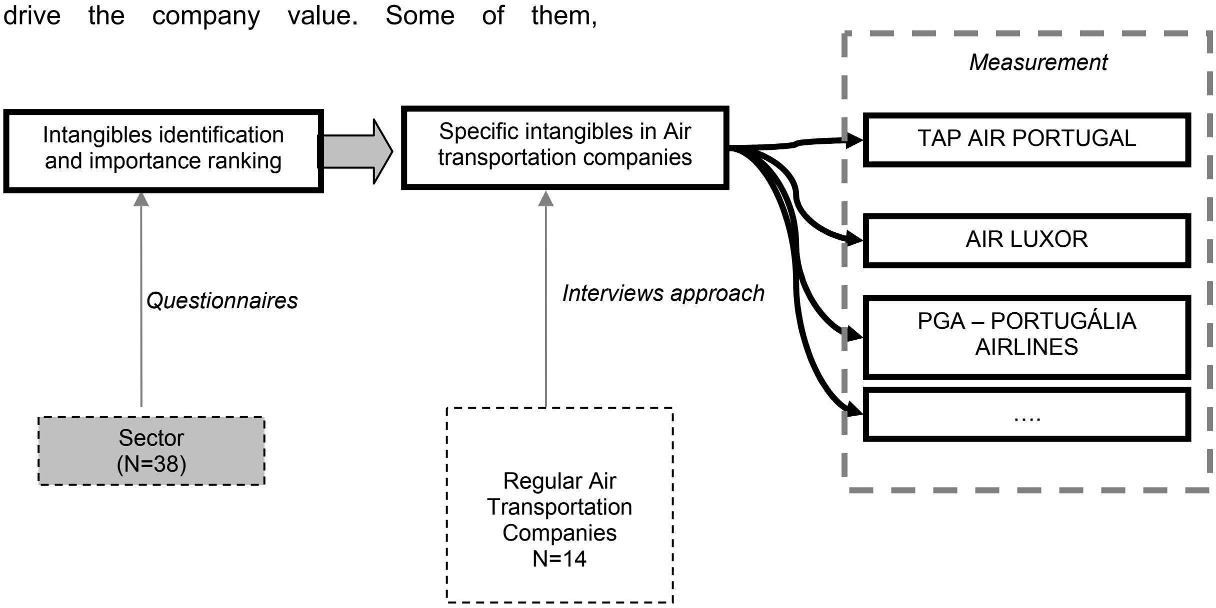


Figure 4: Intangibles framework approach I

We assume, in our investigation, five hypotheses relating intangible assets identification and measurement. These are shown in Table 2.

Table 2 – Investigation hypothesis

H_1	There is an information gap about intangibles in the Portuguese Air Transportation Sector, depending from:	H_{11}	Company size
		H_{12}	Type of license issued by NICA
		H_{13}	Manager function
H_2	Air Transportation Sector evidences specific intangible assets that should be measured and reported, depending from:	H_{21}	Company size
		H_{22}	Type of license issued by NICA
		H_{23}	Manager function
H_3	Intangibles are not included in the traditional financial balance sheet statement. It depends from:	H_{31}	Company size
		H_{32}	Type of license issued by NICA
		H_{33}	Manager function
H_4	Intangible assets are not adequately reported in the stakeholders' management reports:	H_{41}	Legal reports
		H_{42}	Voluntary stakeholders' reports
H_5	There is a positive correlation between intangibles valuation and potential future returns. It depends from:	H_{51}	Company size
		H_{52}	Intangible typology
		H_{53}	Accounting and financial rules followed

Meanwhile, the theoretical construct is evidenced by figure 5. In figure 5, hypothesis and theoretical framework approach matching, is presented.

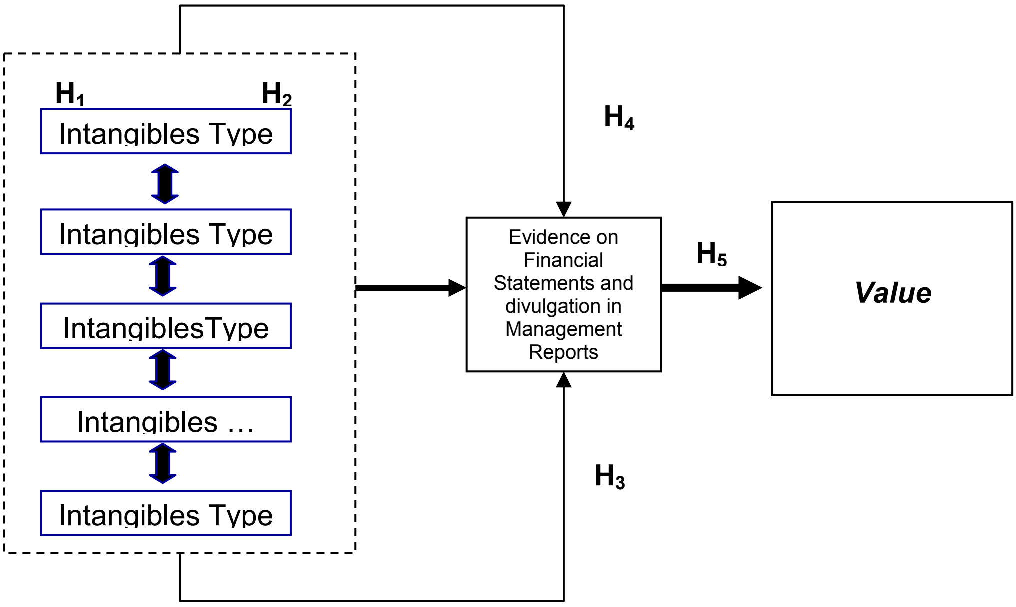


Figure 5: Theoretical framework approach II

After fieldwork completion, we expect that most of the assertions assumed in this paper, will be effectively confirmed. From an accounting point of view, we expect that intangible importance and consequent recognition depends from company size, organisational culture and company maturity stage. Accounting barriers in their fair measurement will also affects the intangible non-recognition. In air transportation sector, strong changes have also occurred – traditional value chains based on linear activities alignment were replaced by a new perspective: the innovation cycle (intangibles recognition) and its impact on the operational cycle A new market approach has also emerged which is based on customers needs identification, the inclusion of those needs in the innovation cycle and thus, their consequent integration in the operations cycle management. Air transportation companies also compete by their innovation capabilities (human and structural capabilities). Value migration (also dependent from the innovation intensity), as stated by Slywotzky (1996:58), requires that companies recognise their value drivers that, on a feasible and continuous base, contribute to the company growth. That migration process, strongly embodied on innovation capabilities, enables companies' airlines to acquire/develop competencies (organisational learning process) that can easily create value and maximise the future expected returns. It is today irrefutable that value creation is the main objective for companies' stakeholders.

Value became the key pointer for those stakeholders. Searching information, design systematic learning processes about companies' innovation and operational cycles, and match them with customers needs, can contribute for the minimisation of value losses in the value migration process.

6.3 Specific intangibles revised

As stated below, specific intangible assets are indeed underlined for air transportation sector (Table 3). However, further investigation is required in order to point out their relative importance. Questionnaires approach will be followed in order to meet this objective in a feasible basis.

Table 3 – Intangible assets (first approach)

Brand names
Fly share agreements
Preventive maintenance programs
Logos and trademarks
Strategic alliances
Frequent passenger programs
Human capital categories (e.g. pilots and maintenance Human Resources)
Regional agreements
Contracts between air transportation companies
Licences to fly
Restructuring strategies
Fiscal planning strategies
Quality certificates
Airports certification

As in Portugal, within Europe, some changes have occurred in air transportation companies - strategic alliances have taken place and deep restructuring programs were implemented. Should they be reported as intangible assets? According their potential financial return stated by IAS 38, we are aware about that approach.

Strategic alliances require "that the partners come to some agreement on the value of their respective contributions to the collaborative entity" (Inkpen and Madhok 2001:49). Every partner has access to new skills and knowledge, increased return is expected. In fact, each alliance is established on payoff to learning approach and on the cost of continued collaboration analysis. In air transportation sector, several companies join the alliance (e.g. Star Alliance) in order to over new destinations with higher passenger's fidelity. Synergies are the most important outcome in this particular value creation process. Fiscal planning and restructuring strategies can also be considered as intangible assets and subject to a patent process (and thus subjected to patent portfolio management analysis). Since 1998, in the United States of America, 49 fiscal planning strategies were patented. Know-how embodied in those strategies can be, in essence, translated into strong future financial returns for stakeholders (opportunity for competitive advantage or process complexity risk increase!?). Nevertheless, no consensus exists about this approach.

7. Final remarks and further investigation

Intangible asset concept is associated with expected future returns. It is viewed as an identifiable non-monetary asset without physical substance, controlled and the source of future returns for the enterprise. In this respect, one of the most visible sources of intangible assets is patent registration, supported by the intensity of research and development. This evidence is consolidated at a later date by the number of patents actually registered and granted by the international agencies. Innovation management is, therefore, a source of competitive advantage for national economies in general and the business sector in particular. Broadly and according to modern economic theories, knowledge is the most subjective asset that appears directly associated to connectivity, information, technological and organisational convergence, and complementary, to mobility. It appears as the main source of competitive advantage, responsible for the organisational productivity improvement. As a dynamic process, it is also understood as the capacity to transform data, to use information, to learn, to test results, to interpret, to support decisions and to take sustainable advantage.

Portuguese airlines companies present poor rates about intangible assets in their financial reporting systems. Our assertion relates that several intangible assets exist that are not included nor adequately reported in the financial statements/stakeholders reports. Future research is required relating intangible assets identification and measurement throughout an income, cost or market approach. A theoretical framework approach was presented in order to identify and quantify the intangibles impact on the financial statements and on value creation process. This investigation is currently in the field. In the same way, similar approach can be followed for worldwide air transportation sector. Other companies should be included in the sample in order to support the assertions issued in this paper.

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